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THE METRIC SYSTEM OF WEIGHTS AND MEASURES IN ENGLISH-SPEAKING COUNTRIES.

By M. I. Wilbert,
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That the metric system of weights and measures is finally making headway among English-speaking people is evident from the stand that representatives of mechanical and manufacturing industries are taking in regard to it.

With scientific investigators, metric weights and measures have been popular for some time; this is especially true of chemists who have occasion to compare the results of their work with that done in the chemical laboratories of Germany or other portions of continental Europe.

The up-to-date pharmacist has also familiarized himself with, and acknowledges the advantages of, the metric system; so far, however, he has been the exception rather than the rule, and many apothecaries, even in our own country, are content to have their working formulas recalculated for them into grains, drachms, ounces, pints and pounds in preference to using the simpler decimal process made possible by the use of metric quantities.

While the more conservative pharmacist has persistently refused to give the metric system a fair trial, the manufacturers of English countries have been getting practical lessons in the necessity of adapting their products to the needs and wants of the foreign consumers, if they wish to compete successfully for their trade.

British as well as American manufacturers are beginning to heed the lesson, and in England steps are being taken to popularize and

ultimately introduce, not alone the metric system of weights and measures, but also a decimal system of coinage.

That this will be a difficult problem, is readily appreciated when we consider the ultra-conservative spirit of the English people and how they have always clung to old ways and traditions, and persistently objected to any innovations.

To illustrate this we need but recall the fact that England retained the Roman system of notation for centuries after other countries had adopted the now universally used Arabic numerals. A still more recent example is the adoption of the Gregorian calendar, in which England was nearly two hundred years behind the south European States.

From the established precedents we would be justified in asserting that it will be difficult indeed to induce the rank and file of Englishmen to dispense with their pounds, shillings and pence, and to count in decimals.

The British Decimal Association, however, in one of their recent publications report that there is a very decided growth of public opinion in favor of a decimal system of coinage in Great Britain, and the compulsory introduction of the metric system of weights and measures throughout the British Empire.

One factor that has been instrumental in bringing about this change of ideas in England, may be found in the reports of British consular agents, who several years ago were asked to secure information on several vital points connected with the introduction and use of the metric system in the different European countries. All these reports, with the single exception of those from Turkey, were very favorable, both as to the ease and rapidity with which trade conditions had adapted themselves to the new system, and the advantages that the new system had in facilitating computation, thereby saving time. These reports also favored the proposed change from the present confused and complicated English system, to metric units, as being in the line of progress, and a decided step in the proper direction for regaining much of England's former influence, prestige and trade.

In Canada the government has been carefully preparing the way, and is ready to introduce the metric system as soon as the United States and England make the change. The course that has been pursued by the Canadian Government is to make the system widely

understood by teaching it in the schools, and otherwise giving the details of the system wide publicity, especially among such of its citizens as are actively engaged in manufactures or commerce.

It is hoped that by this means the system will have become so well known by the time a necessity for change arises, that the latter will cause little or no disturbance in the ordinary channels of trade.

The feeling that exists among representative manufacturers in our own country is well summed up in the report of the House Committee on Coinage, Weights and Measures, and also in the reports of numerous special committees of industrial as well as scientific societies that have been appointed to inquire into the feasibility of introducing the metric system of weights and measures into the United States.

Among the reports that are of special interest in this connection the writer would like to call particular attention to one recently made to the Franklin Institute, Philadelphia.

This Institute began its career in 1826, and has always taken an active part in the development and advancement of anything pertaining to manufactures and the mechanic arts. The members of the Institute have contributed materially toward advancing manufactures along rational and scientific lines by contributing at the meetings of the Institute or through the columns of its journal such information, gathered from practical experience, as would be of use to others in overcoming problems and difficulties that might arise. In this respect, the Franklin Institute has practically revolutionized the long-cherished belief, that the experiences of a manufacturer are to be used only for his individual benefit and not for the common good.

The nature of the report, and the action that was taken on it, acquire added interest from the fact that twenty-seven years ago the same Institute adopted the majority report of a special committee, appointed for the same purpose, that was unfavorable to the proposed introduction of the metric system in this country.

The report, accepted at that time, after reviewing the history of the metric system, and the peculiar conditions under which it was produced, concluded that the metric system was not based on scientific principles, and that its defects outnumbered its advantages. In addition to this it was thought that the adoption of the metric system would have a tendency to estrange us, commercially, from

England, with whom more than three-fifths of our trade was, at that time, conducted. Altogether the possible benefits were thought to be of less advantage than the probable immediate loss. The general lack of interest in, or appreciation of, the advantages of the metric system, at that time, is apparent from the fact that the memorial that was subsequently forwarded to Congress by the Boston Society of Civil Engineers was endorsed by but seventeen other scientific or industrial organizations (AM. JOUR. PHAR., Vol. 49, p. 612). It should be stated, however, that in the following years several industrial organizations, among them the Philadelphia Engineers' Club, adopted resolutions favoring the introduction of the metric system, especially its compulsory introduction into the curriculum of the public schools.

The agitation at that time was not without some practical results; we find, for instance, that in 1878 the metric system was officially introduced into the United States Marine Hospital Service; subsequently the same system of weights and measures was also adopted by the medical departments of both the United States Army and Navy.

In 1880 the metric system was officially recognized in the U. S Pharmacopœia, and in the next decennial revision it was used exclusively.

Despite this official recognition, however, the metric system has made comparatively little progress with the rank and file of the medical or pharmaceutical professions, and its general introduction will probably be brought about by the changes that have been made in our commercial and industrial relations with the countries where it has been adopted.

Philadelphia manufacturers having trade relations all over the civilized world, necessarily feel the disadvantages that result from being compelled to use different systems of weights and measures. It was to inquire into this condition of affairs, and the possibility of avoiding them, that the Franklin Institute appointed the special committee "on the feasibility and advisability of adopting the metric system of weights and measures in the United States."

Briefly, the conclusions of this committee, as subsequently endorsed by the Institute, were as follows:

That it is desirable to obtain an international standard of weights and measures.

That the metric system is commendable not alone as a suitable international standard, but also for facility of computation, convenience of memorizing and simplicity of enumeration.

That we cannot expect nations using the metric system to abandon that and use our systems instead.

That the only valid objection that has been made to the metric system is that it cannot continuously be subdivided by two.

That in the case of our decimal currency this objection has proven to be more than overcome by its other advantages.

That as a minimum unit of lineal measurement the millimeter is fully as convenient as the sixteenth or thirty-second of an inch.

That it is not considered practicable to inaugurate the adoption of the metric standards for weights or liquid measures, in advance of the lineal measure, even if the former would not involve as much inconvenience or expense as the latter.

The reading of these conclusions, and the resolutions that were proposed to accompany them, was followed by an interesting discussion that is being published in the current numbers of the *Journal of the Franklin Institute.*

A few additional points that were brought out in the course of this discussion may be of interest to pharmacists.

The meter, or unit of length was, of course, most violently assailed, largely from the standpoint that compulsory adoption of the same would cause confusion, delay and serious loss in machine-shop practice.

Mr. Vauclain, the superintendent of the Baldwin Locomotive Works, Philadelphia, in speaking of the futility of this line of argument, said that no up-to date machine shop could afford to allow its employees to use foot-rules or measuring sticks, but that all modern shop-practice was based on the use of steel gauges, and the working to scale from drawings, instead of using any system of lineal measures. In illustration of this point he said that the works he was connected with employed upward of 11,500 men. The daily output was five complete modern locomotives a day, each one of which required upward of 13,000 separate pieces, accurately made and adjusted before it could be turned out on the track as a finished product.

If we stop to consider that many of these various parts are interchangeable, or that parts are often supplied to replace broken or

damaged parts of a locomotive that has been in use for years, we will appreciate that it would not do in practice to depend on the measuring stick, or measuring ability of the different men that handle each one of these separate pieces.

According to Mr. Vauclain, the only department of a modern machine shop where actual measures are used, is the draughting-room, and here the introduction of the metric system would be hailed as a distinct advance, facilitating as it would the making of drawings to scale, on account of the interchangeability and decimal character of the units or subdivisions of the lineal measure. The chief advantage of the metric system, and the one that is admitted by its most violent opponent, is the correlation that exists between the fundamental units. As was pointed out by another member of the Franklin Institute, this harmony of relation tends to facilitate computation, and also reduces the strain on the memory in arithmetical calculations.

This is of great importance at the present time, where technical or commercial calculations play so important a part in the conduct of every-day business transactions. It will readily be admitted that if all factors could be reduced to decimals a considerable amount of time could be saved in making the extended and many times complicated computations that are necessitated by modern commercial or industrial practices.

Another advantage, and one that should not be lightly gone over, was dwelt on by Mr. Christie, of the American Bridge Company. This is the facility with which one can retain in memory the fundamental elements of the metric system, and the ease with which a clear comprehension of these elements may be impressed even on the mind of a child. We will appreciate this the more if we compare it with the complicated tables that must be memorized, if we wish to retain even a most elementary off-hand knowledge of our complicated systems of weights and measures.

One other objection that is usually made to the metric system is the complicated and to us foreign nomenclature. It is usually asserted that there are too many units, or too many names to be memorized. In answer to this it has been repeatedly pointed out that this is no valid objection, but that in actual practice many of these different names rapidly disappear. In the case of our decimal coinage, mills, dimes and eagles are seldom used or even referred to, the dollar and cent being the only units in practical use.

In addition to this it may be well to state that British as well as American consular reports appear to indicate that the introduction of the metric system has met with least opposition in those countries where it has been allowed to replace, or to be implanted on existing systems of weights and measures. Even in France there was considerable opposition to the metric system until the people were allowed to retain the old and familiar names for weights and measures that more or less closely corresponded to the new ones. The same is true of Holland, Germany, and other countries where the metric system has been introduced.

For commercial purposes the essential feature is that our units for weights and measures, no matter what we choose to call them, should correspond to the meter, liter and kilogram of the metric system. Bearing this in mind and also the fact that there would be less objection to the introduction of a new standard, providing the old names were retained, it might be feasible for Congress to introduce a new or metric standard yard that would be the equal of 1 meter; a new or metric standard quart the equal of 1 liter, and a new or metric pound to equal 500 grammes, or 2 pounds to equal 1 kilogram. These various units could for ordinary purposes be divided into halves, quarters and even eighths, very much as our dollar is used at the present time.

This adaptation of familiar names need not extend beyond the units that are ordinarily used in the course of retail trade, for all other purposes either the French titles or a modification of them should be used.

For physicians or pharmacists, it will be much simpler if they acquaint themselves with metric quantities in the terms of the metric system as used by scientific men all over the world; a reasonable and fair trial will convince any one that this is not even a difficult task, to say nothing of its being impossible.

Looking ahead, it is fair to assume that another decade will see the use of the metric system firmly established in every civilized country of the globe, and it is to be sincerely wished that the pharmacists of the country will contribute their share to bringing about a reform that is as simple as it is sensible.

Officially, the pharmacist of the country has done good work in bringing the metric system to the attention of many that would not otherwise have paid much attention to it. Even in the immediate

future there is little to fear of any backward step being taken, at least not in the coming edition of the United States Pharmacopœia. The committee having the revision in charge has been definitely instructed to retain the metric system of weights and measures, as adopted in the last decennial revision, and unless the members of this committee are individually and collectively willing to betray the trust that has been placed in them by the Convention of 1900, they will not in any way abrogate or change from the advance that was made more than ten years ago. On the other hand, let us hope that the Revision Committee will jealously guard the established record, so that the professions of medicine and pharmacy may go down in history as being, at least officially, ahead of their contemporaries in furthering a reform that should have been introduced long ago.

HYOSCYAMUS MUTICUS.

By J. B. Nagelvoort.

It seems feasible to grow this plant in a temperate zone, which would be a pleasing solution of our dependency on European Hyoscyamus niger, arriving, as this often does, in a very poor condition for pharmaceutical purposes—mouldy, blackened, low in alkaloidal contents.

Seed, personally obtained from Egypt, has grown to small plants, promising well, under different conditions; in sand, in poor sandy soil, and in common garden soil, in the United States as well as in Holland.

Of course there is still a wide stretch between this condition and mercantile requirements.

It might not be superfluous to refer to Gadamer, *Archiv d. Pharm.*, 1898, 236, 704 [leaves of Hyoscyamus muticus contained ± 1 4 per cent. (one and four-tenths per cent.) Hyoscyamine]. And to Dunstan and Brown, Transactions of the (English) Chemical Society, 1901, vol. 79, "The quantity obtained corresponded with 0·87 per cent. (eighty-seven hundredths) calculated on the dry material."

The calculations of 0·1 per cent. (one-tenth) and less, of hyoscyamine, in henbane, obtained in the European market, are usually made on the material, air-dried and in a condition to be pulverized and sifted. This condition will not differ, therefore, very much from the condition of Professor Dunstan's material.

The above facts will happily obliterate the proposed titration of the mydriatic alkaloids in an assay of henbane preparations, using iodeosin as indicator, whereby Prof. E. Schmidt obtained 0.286 per cent. alkaloid.[1] Dunstan isolated his alkaloid, ready for the balance, in a crystalline condition, which I consider a far safer way of operating. The use of iodeosin is attended by so many details, which have to be scrupulously carried out, or the results of its application are apt to be misinterpreted, if the method were to be generally applied.

I cannot forego to quote Prof. E. Schaer "On the action of chloroform and similar solvents on alkaloidal salts (*Ph. J.*, March 24, 1900)," because Dunstan reports, "in fractionally crystallizing this alkaloid, by adding light petroleum to its solution in dry chloroform, it was nearly all obtained in white, silky needles, melting at 105°."

N. B.—I have some of the original Egyptian material of Hyoscyamus muticus left, and shall be pleased to let any one who is interested in this investigation have some (care of editor AM. JR. PH.).

DRUG AND MEDICINAL-PLANT INVESTIGATIONS IN THE DEPARTMENT OF AGRICULTURE.

BY RODNEY H. TRUE.

Those familiar with the question of the supply of crude drugs for the American market are well aware that at the present time by far the larger part of our supply of crude drugs not derived from plants exclusively American in their location is obtained from foreign sources—chiefly from Germany, Austria, Belgium and England. Other drugs of great importance are derived from the Orient, conspicuously cinchona and opium, and South America furnishes ipecac and coca leaves. Of these drugs, quantities valued at more than $6,000,000 are annually imported into the United States. Some of them are here worked up by manufacturing chemists into their characteristic active principles, and others are used directly for the preparation of medicines.

It has long been a matter of earnest inquiry by thoughtful men whether of these articles some considerable proportion could not be grown in this country, offering, as the United States does, a great variety of climatic and soil conditions. Apart, nowever, from

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[1] *Apotheker Zeitung*, 1900, No. 2.

sporadic experiments by individuals, which have not greatly affected the market as a whole, little has been accomplished, and the last census shows a very large importation of articles of this nature. This desire on the part of far-sighted men connected with the drug business in this country for a thoroughgoing attempt to develop drug cultivation as an American industry, has been indicated in resolutions before pharmaceutical conventions and other bodies of like nature. The drug-plant investigations of the Bureau of Plant Industry have been reorganized, and, in response to the demands of the times, are concerned with the problems of our crude drug supply.

The work begun includes the cultivation of a considerable number of the most important plants capable of growth under American conditions of climate and soil in widely separated parts of the country. The kinds of plants are belladonna, hyoscyamus, stramonium, digitalis, aconite, arnica, the opium poppy and licorice. Trial plats of these plants have been started in Florida, North Carolina, at Washington, D. C.; in Massachusetts, Vermont, Wisconsin and Washington (both east and west of the Cascades). The information to be derived from widely separated experiments will doubtless enable us to judge in what part or parts of the country the particular plants in question will reach their best development. In order to give larger amounts of material for laboratory study, half-acre plats of a number of these drugs are being provided at Washington, D. C., and at Dover, Mass. A careful assay of these drugs for the active principles will be made in the hope of gaining a rough idea of the quality of the drug produced under the different conditions here concerned. This will, of course, need to be repeated for a number of years in order to eliminate special influences of the seasons. The Bureau of Chemistry will co-operate with the Bureau of Plant Industry providing for a careful assaying of the samples sent in from the field. There is also contemplated in connection with this work a pharmacological study of drugs wherever physiological tests are desirable to support the other work.

The questions first to be investigated concern very practical matters. The time of collection of the drug will be carefully investigated. In the case of leaf drugs the plan provides for the collection of samples at different stages of development and for their careful assay for the active principle. Thus we shall be able with

abundant reason to indicate that stage in the plant's growth at which the maximum amount of active principle can be obtained, and to put on a more solid basis a matter which at present rests on a more or less traditional foundation.

The manner of curing the drug to preserve both appearance and active principle will be taken up among the earliest subjects for investigation. Custom at present dictates how drugs shall be cured, and the scientific evidence underlying this custom is weak. Curing by artificial heat at various degrees, curing by natural heat, curing in the sunlight and curing in the shade, will be studied with reference to the effect on the appearance of the drug and on the assay qualities. The part played by the oxidizing ferments in bringing about deterioration in drugs will be made a matter of early investigation, and the results of studies made by this department on the curing of tea and tobacco give strong ground for hope that they may be carried over with great profit to the question of drugs.

Field experiments to determine the value of special treatment in enhancing the quality of the drug are also contemplated. The question of the effect of different methods of fertilization and conditions of cultivation, the question of shade and sunlight, and of special methods, such as removing flower-buds, will also be investigated.

It is the hope of those in charge of this work to extend these studies to include the domestication and cultivation of various native drug-plants which at present furnish valuable drugs. Many of these plants, as has been pointed out by various drug-handlers from time to time, are becoming increasingly difficult to obtain in sufficient quantity, and the fear has been expressed that extermination at no very distant date was in store for these things, with the resulting disappearance of the drug from the market. Obviously, this would be a calamity to the human race, and the cultivation of these things under agricultural conditions will be a matter of very careful study. Experiments have already begun on a very small scale with hydrastis, Seneca snakeroot and spigelia. Attempts to find methods of growing seed will be first made, and should this be successful, the cultivation on a commercial scale will be made the subject of investigation.

In so far as opportunity allows, the hope is entertained that the investigation of plants promising to furnish valuable new drugs will

be undertaken. There are at present in the West and other parts of the country a number of plants widely used for local difficulties which seem to promise great usefulness. The investigation of a limited number of such cases may be undertaken.

The primary aim of this work will be to render the United States self-supporting in the matter of those crude drugs which can with profit be grown here. This is, of course, a very far-reaching problem, and will require for its solution a long time, patience, and very careful study, both in the laboratory and in the field. Since this work is essentially pioneer work, it is hardly probable that immediate results will be obtained.

In addition to the work above planned, the establishment of a laboratory for the study of drug alteration in the Bureau of Chemistry will contribute another source of valuable information on drugs.

BUREAU OF PLANT INDUSTRY,
U. S. DEPARTMENT OF AGRICULTURE.

THE LEECH HIRUDO OR SANGUISUGA—HOW TO CARE FOR AND KEEP IN GOOD CONDITION.[1]

BY J. L. LEMBERGER.

Some pharmacists sell leeches, and where there is a large demand there is no trouble to keep them without serious loss, as they are usually so well packed in native peat that they can be well kept and remain healthy for several months. But when the demand is only occasional, then a difficulty comes in the way—that of preservation; they become diseased and die, very soon affecting the entire stock.

It will be interesting knowledge to some of us, that as far back as 1837 an enterprising doctor, who went from New York City to Detroit, and who had been a leech doctor in New York (by leech doctor I mean one who had used them in his practice very freely and successfully), experienced great difficulty in procuring them in his new field of practice (the transportation then was not so rapid as it is now, and by the time he got his leeches from New York

[1] Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1902.

many were dead), so he contrived a plan to make a tank 8 feet long by 6 feet wide by 4 feet deep, placing this in moist or marshy ground near a stream of water, putting about 9 inches of cobble into the tank and running water into it, so that it was kept fresh, receiving the water in the bottom of the tank with an outlet near the top. Both openings had to be protected by a wire cloth or screen to keep the leeches from escaping. He put some leeches into this receptacle and soon found, with a little attention, that he not only had a good stock, with very few casualties, but made quite a business of raising stock for sale. The cobblestones placed in the bottom of the tank afford refuge, and by continual contact with the stones rids them of the slimy deposit that seems to be the natural menace infecting them and causing disease. With this treatment and a few frogs occasionally thrown into the tank about once a week, feeds and sustains them. When thus cared for they breed freely, produce eggs during the months of June and July and mature in two years, increasing the family very rapidly. When ordinary care is given they thrive and live fifteen years.

I am indebted for some of these facts to a paper prepared by the Elder F. Stearns, of Detroit.

Our plan has been to keep them in a small firkin or container of peat in which they are shipped, until they show signs of disease, when they are transferred to a porcelain leech-jar and water frequently renewed, say once or twice a week. In this way they can be kept for a considerably longer time, although they do not grow in size, and unless they are fed they seem to shrink in size. Age, however, does not depreciate their blood-sucking powers, as very frequently the smaller leech is as vigorous as the larger. Where there is a facility for so doing it is certainly better to have them kept in a box similar to the one described, only on a smaller scale. Where water facilities allow, a properly arranged aquarium, in which the same principle can be applied as in the water-tank referred to, will answer all purposes, and can be made a drug-store counter attraction as well.

In conclusion, we affirm that leeches at 50 cents apiece are more profitable than paregoric at 5 cents per fluid ounce.

HYDROGEN PEROXIDE.[1]

By Robert C. Pursel.

Insufficient time has prevented me from experimenting with the making of hydrogen peroxide in a small way. Having been for several years connected with a firm who manufactured hydrogen peroxide extensively, and it being part of my duties to assay the finished product, I do not think that it can be prepared in a small way profitably. So many firms are making it to-day and competition is so keen that the pharmacist is now enabled to buy hydrogen peroxide, conforming to the U.S.P. requirements, at a reasonable price.

All the barium dioxide used in this country to-day has to be imported; usually it is shipped in strong casks containing about 1200 pounds. This quantity would last the average pharmacist for a considerable length of time, and I think before the last of it was used up it would begin to get hard and lumpy and difficulties would be experienced in working it.

By using phosphoric acid, as the U.S.P. directs, it is almost impossible to get a product that assays 10 volumes of available oxygen. Some manufacturers use hydrofluoric acid (this may be ascertained by applying the U.S.P. test for the acid), and this would necessitate suitable apparatus. The operation would also have to be performed away from shelf-bottles and all glassware, else they would in a short time become beautifully etched. The acidity of a large quantity of hydrogen peroxide can be adjusted as easily, and probably better than that of a small quantity. Altogether there is a great deal to know about the making of hydrogen peroxide that cannot be found in textbooks, and the average pharmacist would encounter great difficulties if he attempted the making of hydrogen peroxide.

Nearly all of the manufacturers of hydrogen peroxide bottle it from a half to one volume above what their label calls for. In this way it will keep under proper conditions for quite awhile and still conform with their label.

Four different makes of hydrogen peroxide were obtained, assayed the day they were received, recorked and kept in the cellar for about six months; they were then assayed with the following results:

[1] Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1902.

No.	Labelled.	Assayed.	Assayed (after keeping 6 months.)
1	15 volumes available oxygen.	15·5 volumes.	13·5 volumes.
2	10 " " "	10·5 "	8·75 "
3	10 " " "	10 "	8 "
4	10 " " "	12 "	10·5 "

No. 4, after standing the above-mentioned time, was still as strong as the maker claimed it to be. I believe that if the cork is removed from a package containing hydrogen peroxide as soon as obtained from the manufacturer, and a piece of absorbent cotton inserted, it will keep better. The loss from evaporation is small, and gases forming, which would cause deterioration, are allowed to escape. Possibly this would not be a practical way to treat small packages, but it may be employed where a large bottle is used to dispense from.

LABORATORY OF W. L. CLIFFE, PHILADELPHIA.

A METHOD OF DIVIDING POWDERS IN PRESCRIPTION WORK.

BY ISAAC M. WEILLS.

Query No. 15. What is the best method for dividing powders in prescription work?

The last few years have seen many time-saving inventions for the pharmacist as well as the druggist, all of which should have been received and hailed as blessings. Many when once used and the old way laid aside for a time are never taken up again except as relics of the past inconveniences. We wonder how we ever were contented to do our work with them; but necessity, it has been said, is "the mother of invention," and has brought out more useful time and labor-saving inventions than all else combined.

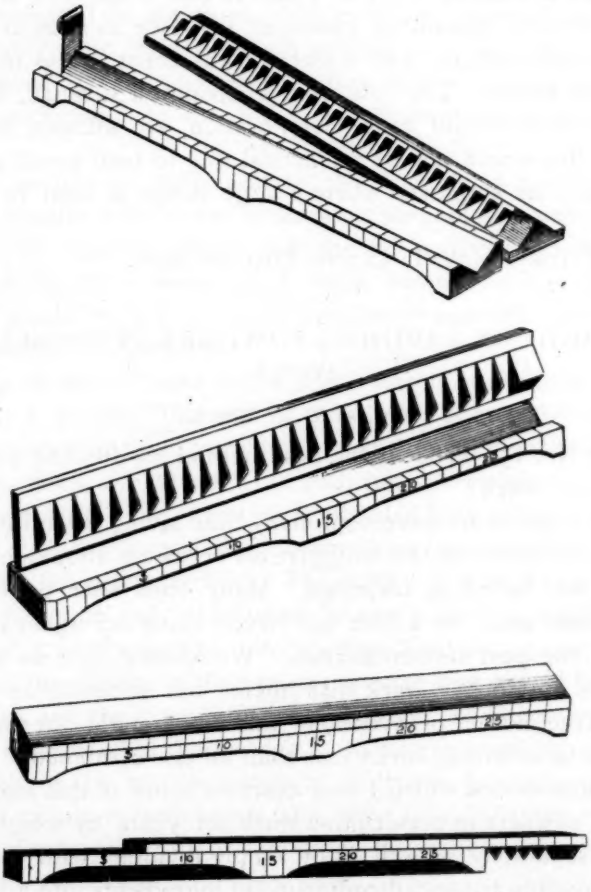
The little device which I now describe is one of this kind. After dividing powders in prescription work for years by weighing each powder separately, as well as by simply dividing with the spatula the thoroughly triturated compounded ingredients into a number of powders called for, I thought of this method, which I think you will all agree with me is an up-to-date device for this work.

It is composed of three pieces. No. 1 is the base and is 7¾

[1] Read at the annual meeting of the Pennsylvania Pharmaceutical Association, June, 1902.

inches long, 1 inch wide and $\frac{7}{16}$ inch thick, and has a V-shaped groove plowed out of the top $\frac{5}{8}$ of an inch wide at the upper end of the V and is $\frac{9}{32}$ of an inch deep. At one end there is a gate swinging on a screw, which allows it to move up and down freely to close the end of the V.

On one edge it is laid off in quarter inches and numbered by five,



A Device for Dividing Powders in Prescription Work.

ten, fifteen, twenty and twenty-five; thus every fifth mark is numbered.

The second piece is simply a strip of brass $\frac{1}{32}$ of an inch thick and as large as the end of the first piece.

The third piece is the same length and width as the first. It is ⅛ of an inch thick, and on the underside there are twenty-seven knifeblades ¼ of an inch apart, and a block ⅜ of an inch long made to fit in the groove in the top of the first piece, and marked on the edge the same as piece No. 1.

When parts one and three are placed together the knifeblades fit in the groove and the marks on the edge of each piece come together and form one line. To operate the machine turn the gate so that the end of the groove is closed by it, then reverse the top-piece so that the block will fill the groove. Now, if you wish, say fifteen powders, simply place the block-end at fifteen, dump your powder in the groove. Now lift part three and reverse it to proper position. Place part three on part one and bring them together, having previously distributed your powder papers. Take up the divider and turn back the gate on part one, place the end of the divider over the powder paper and slide part three along, when the powder will be shoved out of the end of part one by the blade on part three. Now simply continue to move the divider from paper to paper and shoving the parts as for the first powder until all have been shoved out, thus making an even distribution.

I have the device here, and any person who desires can have the opportunity of seeing how it does its work.

In conclusion would say that it is not patented and any pharmacist is at liberty to make or have one made for his or her own use.

There is a cut of the device connected with and made a part of this paper.

TINCTURE OF ARNICA FLOWERS.

By H. F. Ruhl.

The U.S.P. directions read as follows: "Pack the powder firmly in a cylindrical percolator, and gradually pour diluted alcohol upon it until 1,000 cubic centimetres of tincture are obtained." Maceration is not mentioned.

Following these directions, even with careful percolation, always yielded a light-colored tincture (at the hands of the writer), leaving the drug far from being exhausted. The powder, when packed in a percolator, occupies perhaps 50 per cent. more space than the volume of the finished product. Because the drug is so bulky is no doubt

one of the reasons why it is not easily exhausted by the U.S.P. process. Another reason is because maceration is not recommended.

Mr. W. S. Spickler (at one time in the employ of the writer) suggested a process which might be termed "percolation by installments," as follows: The powder is packed as directed in the Pharmacopœia and menstruum poured on to saturate the drug and leave a stratum above it. When the liquid begins to drop from the percolator the orifice is closed with a cork and left to macerate for forty-eight hours. Percolation is then allowed to proceed slowly until one-fourth of the percolate is obtained. The orifice of the percolator is again closed and the contents allowed to macerate for twelve hours. Percolation then is allowed to proceed until another fourth of percolate is obtained. This last operation is twice repeated until the whole of the percolate is obtained.

The finished percolate is then removed and more menstruum poured on, and percolation is continued until the drug is practically exhausted. This weak percolate is put aside and used to start the operation the next time the tincture is to be prepared.

LAWS REGULATING THE SALE OF POISONS.

By Joseph L. Lemberger.

The query to which I have consented to give attention appeals to me from the viewpoint of duty to the Commonwealth. We know that from peer to peasant, from the most cultured to the most ignorant, danger threatens their existence by voluntary resort to the use or abuse of poisons, the sale of which may not be sufficiently safeguarded by law. All of us who have been in the active drug business have met with the habitual user of opium or morphia or cocaine, and would gladly have taken refuge from responsibility in a rigid law, and have helped our fellow mortals as they gratified an abnormal desire which must hasten physical wreck. It may be considered a deprivation of personal liberty to offer this suggestion, but in the writer's judgment, after years of observation and the knowledge of misery entailed by the abusive use of poisonous drugs, he feels persuaded that a more stringent law making the indiscriminate purchase less easy, would, in a large measure, serve as a protection against their too free use. We have taken pains to examine our relation to the laws in the sisterhood of States to discover whether

our law is more or less stringent than theirs, and make such information the basis of any judgment on the subject herewith expressed.

Our own State law, in Section 10, prescribes that "A poison in the meaning of this Act shall be any drug, chemical or preparation which, according to standard works on medicine or materia medica, is liable to be destructive to adult human life in quantities of sixty grains or less."

"No person shall sell at retail any poisons, except as herein provided, without affixing to the bottle, box, vessel or package containing the same, a label printed or plainly written, containing the name of the article, the word 'poison' and the name and place of business of the seller; nor shall he deliver poison to any person without satisfying himself that such poison is to be used for legitimate purposes."

"It shall be the further duty of any one selling or dispensing poisons which are known to be destructive to adult human life in quantities of five grains or less, before delivering them, to enter in a book kept for this purpose the name of the seller, the name and residence of the buyer, the name of the article, quantity sold or disposed of and the purpose for which it is said to be intended, which book of registry shall be preserved for at least two years, and shall at all times be open to the inspection of the coroner or courts of the county in which the same be kept."

There is also a law, approved the 12th day of May, 1897, controlling the sale of emmenagogue preparations, as follows:

"SECTION 2. A person who sells, lends, gives away or in any manner exhibits or offers to sell, lend or give away, or has in his possession with intent to sell, lend or give away, or advertises or offers for sale, loan or distribution, any instrument or article, or any recipe, drug or medicine for the prevention of conception, or for causing unlawful abortion, or advertises or holds out representations that it can be so used or applied, or any such description as will be calculated to lead another to so use or apply any such article, recipe, drug, medicine or instrument, or who writes or prints, or causes to be written or printed, a card, circular, pamphlet, advertisement or notice of any kind, or gives information orally, stating when, where, how, of whom or by what means such an instrument, article, recipe, drug or medicine can be purchased or obtained, or who manufac-

tures any such instrument, article, recipe, drug or medicine, is guilty of a misdemeanor, and shall be liable to the same penalties as provided in Section 1 of this Act."

In correspondence with secretaries of the Boards of Pharmacy of all the States in the Union where such a board exists, we have the answers from thirty-eight (38), most of whom give some attention to this very important subject. Some States, however, have no poison law. The following have, and in order to make the paper as complete as possible for comparison, and to determine where we fail to be as careful, or more so, than other States, we note as follows: We have briefly summarized, except in a few instances, where we quote largely. We find many States have adopted the two schedules A and B, as follows:

SCHEDULE A.

Arsenic and its preparations; corrosive sublimate; white and red precipitate; bin-iodide of mercury; cyanide of potassium; hydrocyanic acid; strychnia and all other poisons; vegetable alkaloids and their salts; essential oil of bitter almonds; opium and its preparations, except paregoric and other preparations of opium with less than two grains to the ounce.

SCHEDULE B.

Aconite; belladonna; colchicum; conium; nux vomica; henbane; savin; ergot; cotton root; cantharides; creosote; digitalis and their pharmaceutical preparations; croton oil; chloroform; chloral hydrate; sulphate of zinc; mineral acids, carbolic acid and oxalic acid.

Alabama.—Alabama merges Schedules A and B into one and includes emmenagogue drugs. The minimum penalty is $10 and the maximum is $25 for violation.

Arkansas.—Arkansas has a special poison law to regulate the sale of cocaine, which can be sold only on the prescription of a physician. A section of this Act regulates also the sale of arsenic and its compounds, strychnia and its salts, corrosive sublimate, hydrocyanic acid, phosphorus, opium, morphine, laudanum. The seller must label plainly in English. No registry required. Minimum penalty is $25, and the maximum, $100.

California.—California has Schedules A and B, and has the penalty

of $100 or fifty days imprisoment, either or both at the discretion of the court.

Colorado.—Colorado has Schedules A and B, including savin oil and ergot, and prescribes the penalty of a sum not exceeding $500 and imprisonment in the county jail for six months. Both penalties can be enforced if false name is given by the purchaser.

Connecticut.—Connecticut has a separate special Schedule A, including rat-dynamite and rough-on-rats and a general summary of arsenic, strychnia, corrosive sublimate, prussic acid and cyanide of potassium, and keeps a register which, when filled, must be deposited with the town clerk. Penalty for violating, $1.

Delaware.—Delaware has Section 4 of an Act as follows: "Every dispenser of drugs shall keep a record of all sales of arsenic, strychnia and corrosive sublimate, said record to be open to inspection. Penalty for non-compliance, $5 for each and every offense."

Dakota, North.—North Dakota has Schedules A and B. The meaning of poison as in Pennsylvania; must register as in Pennsylvania, with penalty of $5 for non-compliance.

Dakota, South.—South Dakota has part of Schedule A, concluding with "other medicines fatal to human life in doses of from fifteen to sixty grains." Schedule B, the concluding clause of which is "fifteen grains or less. No poisons in Schedule B shall be sold to any person unknown to the seller unless introduced by some person known to the seller. Minimum penalty, $25; maximum, $100 for every commission."

District of Columbia.—District of Columbia has Schedules A and B, requiring labeling of box or vessel containing the poison, as well as the outside wrapper. Must register in a book kept for the purpose. The customer must be acquainted with the poisonous character of the article he purchases. Minimum penalty $25, maximum $100.

Florida.—Florida merges Schedules A and B. Unregistered pharmacists cannot sell. Registered pharmacists keep no record, but must label name of poison, name and place of business of seller, purchaser must be aware of poisonous character of the drug and must want it for legitimate purposes. Minimum penalty is $50; maximum, $100.

Georgia.—Georgia has enlarged Schedules A and B, including some of the mineral acids and a special Act regulating the sale of opium

and its preparations to habitual users. We give Sections 1 and 2 of their law:

SECTION 1. That it shall not be lawful for any druggist or other dealer in drugs and medicines to sell or offer for sale any sulphate or other preparations of morphine in any bottle, vial, envelope, or other package, unless the same be wrapped in a scarlet paper or envelope, and all bottles or vials used for the above purpose shall have, in addition to said scarlet wrapper, a scarlet label lettered in white letters, plainly naming the contents of said bottle.

SEC. 2 covers the penalty, which is not less than $10 nor more than $50, at the discretion of the court, for each and every violation of the preceding section.

Illinois.—Illinois names a few poisons and then generalizes articles usually denominated poisonous. The seller must mark poison, and if he fails to keep a record of sale, kind, quantity, or the purchaser gives false name, unless prescribed by a physician, he pays a minimum penalty of $25 or maximum of $50.

Indiana.—Indiana allows merchants to sell paris green, white hellebore, London purple, and any chemicals used as insecticides, and has a special Act forbidding sale, gift or barter of opium, morphine or cocaine to any person addicted to the habitual use of the same. Penalties for violation: minimum $10 and maximum $50 for each offense.

Iowa.—Schedules A and B require proper poison labels, must register sale and sell only to persons familiar with the character of poison and who represent it to be used for proper purposes.

Kansas.—Kansas has Schedules A and B and in addition Schedule C on emmenagogues, in which a provision is made that they shall not be sold except on a physician's prescriptions. Prescriptions shall be retained by the dispenser. Penalty: minimum $25, maximum $100.

Kentucky.—Kentucky requires the registry of the sale of poisons, making special mention that emmenagogues, such as preparations of tansy, savin, ergot, cotton root (proprietary or otherwise), shall not be sold only upon the original prescription of a legally qualified physician, and makes a violation a misdemeanor and penalty of not less than $10, and has a special section providing for the sale of cocaine only upon the original prescription of a legally qualified physician or dentist, forbidding the refilling of a prescription except

it be renewed by the physician. Penalty of $50 attached for violation. It further provides that cocaine and its salts shall be sold at wholesale only to pharmacists registered under this Act to legally qualified physicians and dentists.

Louisiana.—Louisiana has a special Act prohibiting the sale of cocaine except on written prescription of a physician and cannot repeat prescriptions under penalty. We quote two sections of this law on account of its peculiarity:

"That all pharmacists, druggists or apothecaries shall label all bottles, vials, jars, boxes, parcels, packages, or other receptacles or coverings or wrappings of drugs, medicines or chemicals sold or dispensed by them, with a label in legible writing or printed letters, giving the name of the proprietor of the store, the name of the physician prescribing, shop and the place of sale of said drug, medicine or chemical; and in case the medicine, drug or chemical be of a nature poisonous to the human system or to animals, said label shall have printed thereon a skull and cross-bones, with the word 'Poison' in large heavy lettering. All prescriptions shall have in addition thereto a number, the name of the person actually and personally compounding the same, the directions for its use internally or externally, and the date of its compounding.

"SECTION 8. That any person offending against the provisions of this Act shall be deemed guilty of a misdemeanor against the State of Louisiana, and shall be prosecuted before any court of criminal jurisdiction, and if adjudged guilty, shall pay a fine of not less than fifty dollars ($50) nor more than one hundred dollars ($100), and in default of payment thereof shall be imprisoned in the parish jail for not more than thirty (30) days."

Massachusetts.—Massachusetts includes with most of the articles found in Schedules A and B, M'Munn's Elixir, Parson's Vermin Exterminator, paris green, rough-on-rats, oils of pennyroyal, savin and tansy, phosphorus, ergot and its fluid extract, forbids the sale of cocaine, except on physicians' prescriptions. The name of poison and name of antidote must go on the package. Penalty $50 and same for giving fictitious name.

Maine.—Maine merges Schedules A and B and says, whoever sells without a written prescription of a physician shall register. No sale of cocaine or its salts shall be made except by dentists or on physician's written prescription. Must label all sales not made

on prescription on a label of red paper with the word "Poison" and antidote shall be named on label. Every failure to label shall be punished by penalty not exceeding $50.

Maryland.—Maryland has just come into possession of a poison law, approved April 11, 1902, and combines Schedules A and B, which require registration of the sale of any of the enumerated articles in their schedules. The offender is liable to a fine of not less than $5 nor more than $100.

Missouri.—Missouri has Schedules A and B. Must label the inside and outside of the package, keep a book; the user must know the poisonous character of the article. Penalty, minimum, $25; maximum, $100. False representation receives the same penalty.

Minnesota.—Minnesota merges the two schedules, but excepts paris green and includes rough-on-rats. A violation is a misdemeanor, with a fine of $50. Giving a false name same penalty.

Michigan.—Michigan has an Act to regulate the practice of pharmacy, but no poison law.

Montana.—Montana has Schedules A and B. The penalty, if ound guilty, a misdemeanor and punished as such.

Nebraska.—Nebraska has seven conditions: (1) Registers the name, age, sex and color. (2) Quantity sold. (3) Purpose for which required. (4) Day and date of purchase. (5) Name and place of abode of person for whom intended. (6) Must carefully mark poison. (7) Neither sell or give away to minors of either sex. (8) Prohibits sale or gift of less than one pound of arsenic without mixing either soot or indigo in portions of one ounce or half-ounce to the pound of arsenic. Penalty, minimum, $20; maximum, $200.

New Jersey.—New Jersey enumerates Schedules A and B, makes the penalty $100 and costs for violation.

New Hampshire.—New Hampshire requires the registry of sales of arsenic, strychnia, prussic acid, corrosive sublimate and nux vomica.

New Mexico.—New Mexico has Schedules A and B and provides for the registering of sales of all poisons as enumerated.

We believe our own statute to be weak in not requiring an age condition similar to the thought expressed in the Ohio, Virginia and Nebraska law. There is no plainer law, nor one more easily comprehended than our own, but we realize how readily persons

can obtain anything they want either in person or by proxy—the latter may be a child or an idiot. A note written by the party desiring a poison can have it if the dealer wants to sell it. Would it not be wise to interest the pharmacists of the State, and more particularly the Board of Pharmacy, or the Committee on Legislation, to use their influence for properly amending Section 10 of the Act of 1891, so that we may have a greater safeguard in the sale of poisons? The writer believes that children should not be the carriers of either laudanum or morphia, in granules or powders, nor any other poisonous preparations, and that the law should be so specific that parents and others must realize the importance of applying in person or use adults in the transaction of such business. We do not believe that the custom of selling poisons to minors prevails to any great extent, but the way is open for the dealer to do so, and therefore our law for the sale of poisons should be made more effective.

New York.—New York has Schedules A and B. Includes white hellebore and all preparations liable to poison in quantities of sixty grains or less. Must satisfy himself that the purchaser is aware of the poisonous character of the article. Must register. Must use a red-ink label and mark well—poison! Must register all sales.

Ohio.—"Section 1. It shall be unlawful for any person to knowingly sell or deliver to any minor under sixteen years of age, except upon the written order of an adult, or to sell or deliver to any person, any of the following described substances, or any poisonous compound, poisonous combination or poisonous preparation thereof, to wit.: The compounds and salts of antimony, arsenic, chromium, copper, lead, mercury, zinc, the concentrated mineral acids, oxalic and hydrocyanic acids and their salts, yellow phosphorus, carbolic acid, the essential oils of almonds, pennyroyal, tansy and savin, croton oil, creosote, chloroform, chloral hydrate, cantharides, or any aconite, belladonna, bitter almonds, colchicum, cotton root, cocculus indicus, conium, cannabis indica, digitalis, hyoscyamus, ignatia, lobelia, nux vomica, opium, physostigma, phytolacca, strophanthus, stramonium, veratrum viride, or any of the poisonous alkaloids or alkaloidal salts or other poisonous principles derived from the foregoing, or any other poisonous alkaloids or their salts or any other virulent poison, except in the manner following:

"It shall first be learned by due inquiry that the person to whom

delivery is made is aware of the poisonous character of the substance, and that it is desired for a lawful purpose; and the box, bottle or other package shall be plainly labeled with the name of the substance, the word 'poison,' and the names of two or more substances which may be used as antidotes. And before delivery shall be made of any of the foregoing substances, there shall be recorded in a book kept for that purpose the name of the article, the quantity delivered, the purpose for which it is alleged to be used, the date of delivery, the name and address of the purchaser, and the name of the dispenser, which book shall be preserved for at least five years, and shall at all times be open to inspection by the proper officers of the law."

Section 3 is strikingly good.

"SECTION 3. It shall be unlawful for any person to dispense, sell or deliver to any person, any salts of cocaine, morphine or its salts, or any of the alkaloids or salts of alkaloids of opium, except upon the written prescription of a legally qualified physician or dentist, such prescription not to be refilled, except upon the written order of the person prescribing the same, except, however, that sulphate of morphine may be sold by a registered pharmacist or assistant pharmacist in original packages containing not less than ⅛ ounce when registered in accordance with the provisions of Section 1 of this Act."

The penalty is: minimum $10, maximum $50, for each offense.

Oklahoma.—Oklahoma follows North Dakota and has a penalty-minimum $25, maximum $100.

Oregon.—Oregon merges both schedules, including emmenagogue drugs; must make due inquiry that the purchaser has knowledge of the poisonous character and represents the article is to be used for legitimate purposes. Must also keep a register. The minimum penalty is $10 and maximum of $100 for each offense.

Rhode Island.—Rhode Island and Providence Plantation has Schedule A covering most of the articles and better classified than North Dakota, and includes proprietary articles recommended as emmenagogues and parturients. Their Schedule B indicates the form of a poison book.

Tennessee.—Tennessee has Schedules A and B as North Dakota. Minimum penalty of $20 and maximum of $100.

Utah.—Utah has Schedules A and B merged, and requires a red

label for poisonous sales, bearing the name of the article and the word "poison" distinctly shown, with place of business and the name of the seller, who shall not deliver any of said poisons without satisfying himself that said poisons are to be used for legitimate purposes, but does not apply to the dispensing of such on physicians' prescriptions. The pharmacist is not required to register poison sales. A penalty for neglecting to label or sale for other than legitimate purposes is $300 for each and every such offense.

They also have a section designated, "Omitting to Label or Mislabeling Drugs." A violation for omitting to label or mislabeling, or substituting another drug for one ordered fraudulently, is classed and punished as a misdemeanor, and should death ensue from such wrong doing, it is punished as a felony.

Vermont.—Vermont has no law regulating the sale of poisons.

Virginia.—Virginia has Schedules A and B requiring a label and at least two most effective available antidotes. Cannot sell to any one under sixteen years of age, except on the written order of a responsible adult person. Entry to be kept in a record book. The minimum penalty $10, maximum $100, for each day's violation.

West Virginia.—West Virginia has Schedules A and B, the same as North Dakota; each sale must be marked poison, with death's head, and register similar to Pennsylvania. Minimum penalty $25, maximum $100.

Wisconsin.—Wisconsin excepts paris green if properly labeled, but includes phosphorus and sulphuric ether, and all the rest of Schedules A and B. Minimum penalty $5, maximum $50. (Read at the Pennsylvania Pharmaceutical Association, June, 1902.)

THE PREPARATION OF OLEATES, OLEO-PALMITATES AND OLEO-STEARATES IN POWDER FORM.[1]

By Frederic E. Niece.

In answer to the above query, mention will be made more in a general way so as to not only embody the full desire of the text, but at the same time include such data as would incidentally suggest itself and have a bearing on the question at hand. As regards the

[1] Read at the Pennsylvania Pharmaceutical Association, June, 1902.

oleo-stearates and oleo-palmitates we find, that in them, we have an invaluable class of substances that act as helpful bearers for an innumerable amount of active medicaments.

The use of the above in their plain, uncombined state, however, is very little desired, but they are most usually used in combination with other substances which find ready application in medicine and surgery and, as such, have a vast sphere of adaptability. These medicaments are substances which are capable of uniting directly with them without altering the properties of either in the least, but enhancing their therapeutic value instead, which, while in such a state of combination, have a field of application wide and extensive. In the preparation of the oleo-stearates and oleo-palmitates, as here suggested, the base-zinc is made use of, but potassium, sodium, magnesium or calcium along with the antiseptic properties of lead, copper and mercury can also be incorporated to suit circumstances.

But as zinc furnishes a base most desirable in all directions, the same will be made use of in the following formulæ, for it has chemical, physical and therapeutic virtues not possessed by the others. In preparing the following solutions, glass instruments should be used throughout the entire process as indicated in each case, so as to insure satisfactory results:

PULVERIZED OLEO-STEARATE OF ZINC.

First prepare a solution of zinc as follows:

SOLUTION ZINC ACETATE.

Zinc acetate	grs. 200
Water distilled	℥ij

Mix and dissolve to a clear solution, strain if any insoluble particles are noticeable.

Right here the fact should be mentioned that, if a desire is created for any other base than the one suggested, as, for instance, copper, lead or mercury, the acetates of these may be used instead of the zinc acetate.

The process is carried out as formulated and the results will correspond to conditions prevailing. Next proceed to prepare the following:

SOLUTION OLEO-STEARATE OF POTASH.

SOLUTION NO. I.

Potassium hydrate	grs. lxxx
Alcohol 95 per cent.	℥ij

Mix and dissolve to a clear solution.

SOLUTION NO. II.

Acid, stearic (fine shavings)	grs. cccxxv
Acid, oleic	grs. lxxx
Alcohol 95 per cent.	℥iij

[*To be continued.*]

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE MORE INTERESTING ADVANCES IN PHARMACY AND MATERIA MEDICA.

BY M. I. WILBERT.
Apothecary at the German Hospital, Philadelphia.

The most interesting book, from a pharmaceutical point of view, that has been published recently is the "Universal Pharmakopöe," by Dr. Bruno Hirsh. The first volume of this work was noticed in a previous number of this JOURNAL (p. 87, 1902), the second has just been issued, and with it a valediction of the veteran compiler, who considers this, the second edition of this monumental work, a fitting close to a long life spent in the interests of pharmacy and its allied branches. Some idea as to the amount of material that has been gathered together within the covers of these two volumes may be had when we realize that of the 1,062 closely printed pages, no less than 47 are taken up by the index, printed three columns to a page.

The advent of this work, at this time, should be of particular interest and value to all who are in any way interested in the coming revision of the United States Pharmacopœia. This work is not alone full of information as to the difference in strength of the various drugs and preparations, but is also full of suggestions for generalizing and equalizing these differences, so that, if properly used, it would prove a mine of useful information.

Another interesting contribution that should be of particular value to the members of the Pharmacopœial Revision Committee, is a review on "the application of microscopical characteristics of vegetable drugs in the Swedish Pharmacopœia," by A. von Vogl (*Phar. Post, Vienna*, 1902, p. 219). After reviewing the advances

that have been made in pharmacognosy, since the introduction of the compound microscope, the writer gives some interesting data as to the necessity of including descriptions of powdered drugs in modern pharmacopœias. He then points out the fact that the descriptions of powdered drugs in the Swedish Pharmacopœia are, on the whole, satisfactory, and a marked advance on those published in the German Pharmacopœia. In a detailed review of the subject Vogl considers that microscopic characteristics are absolutely necessary for all drugs that can only be positively recognized by means of the microscope, either as to purity or quality; for instance, for such drugs as only occur in the form of powder, as starch, lycopodium and kamala. The compound microscope is also of importance in the recognition of all drugs of organic origin that may or do occur in trade, in the powdered form. These latter drugs may, according to the writer, be divided into two classes, the first having structural characteristics, such as leaves, plants, barks and roots.

The second class includes all drugs not having any structural characteristics but in which the adulterant is likely to have some structural forms, as in the gums, resins, inspissated juices and other drugs of a like nature.

The writer lays particular stress on the desirability of Pharmacopœias, including only the most important characteristics, especially such as are characteristic of the particular drug under comment at the time. Anything beyond this, the author thinks, belongs to a text-book on Pharmacognosy and not in the Pharmacopœia.

Considerable space has been devoted, by the pharmaceutical journals of Continental Europe, to a discussion of the generally precarious and unsettled condition of the apothecaries business. As is well known, in the majority of countries of Continental Europe the practice of pharmacy is hedged in with a variety of more or less irksome and oppressive regulations. Coupled with this, European pharmacists are also suffering from the gradual but, nevertheless, steady decline in prescription business, due to the increase in favor of other non-medical therapeutic measures, such as hot or cold baths, massage, the X-rays and other forms of phototherapeutic measures, all of which have materially decreased the natural sources of income to the pharmacist. Add to this the tremendous and still growing list of patented or proprietary preparations and we can easily appreciate that the position of the European pharmacist can hardly be considered to be any more desirable than our own.

NUMBER OF NEW REMEDIES.

In this connection a list or catalogue of the newer materia medica that is just appearing in the *Pharmaceutische Centralhalle* is of interest. A rather literal translation of the title is: "A list of the newer remedies arranged according to their trade names and also their scientific or chemical titles. By Hugo Mentzel, Dresden." We can get some idea of the number of new remedies that have been foisted on an unsuspecting public when we consider that this list, including, as it does, the references to notices that have appeared in the *Centralhalle* during the past ten years, presents under the single letter A, from Abrastol to Azurin, 418 separate titles, covering 16 closely printed pages. That our own American products are not very effectively covered is evidenced from the fact that a cursory comparison of this catalogue with an American price-list of a recent date showed that upward of fifty American remedies were not included in this single letter. This is certainly food for thought.

Of the drugs and preparations that have been especially noticed in recent pharmaceutical journals we might enumerate:

Acetone Sulphite.—This is being introduced as a substitute for sodium sulphite, or potassium metabisulphitè. Among the advantages that are claimed for this preparation, as a preserver of photographic developers, is that it may be made in solutions as concentrated as 50 per cent.; it has the property of being itself perfectly stable and keeping photographic-developing solutions clear and colorless.

Acetozone is the name given to a powerful oxydizing agent and germicide, formerly known or sold as benzozone. Chemically, it is said to be Benzoyl acetyl peroxide. From a pharmaceutical point of view it is particularly interesting, from the fact that it readily decomposes when brought in contact with glycerin, alcohol or other organic solvents. The manufacturers particularly caution buyers not to bring it in contact with organic matter, nor even keep it in a warm place. Several cases have been reported where the container has been broken with explosive violence, due no doubt to a disregard of some portion of the special caution that accompanies the packages as sent out by the manufacturers.

Alcohol.—The increasing use of alcohol, for technical purposes, is attracting considerable attention in several of the European countries. In France, the possibility of using alcohol as a source of

motive power, especially for automobiles, is being actively discussed. In Germany the use of alcohol for illuminating purposes, in connection with incandescent mantles, has made considerable progress. In addition to this several patents have been recently issued for producing alcohol practically in a solid form. These blocks of alcohol, or alcohol-impregnated materials, are now on the market, and are convenient for heating small quantities of liquids.

Aloes.—A. Tschirch (*Schweiz. woch. f. Chem. u. Phar.* 1902) confirms his previous statements that Cape aloes is obtained largely, if not entirely, from Aloe ferox Miller. According to Tschirch's informant, other species of aloes are not used, chiefly on account of the fact that the juices they contain are too thin and limpid to offer a remunerative quantity of aloes. Another reason is that the leaves do not stack well on account of the absence of the thorny edges, which tend to hold the leaves of Aloe ferox in their proper position when placed over and around the depression or receptacle in which the juices are collected.

According to Tschirch, a considerable amount of the juice is now being sold by collectors to factories, where with modern appliances the process of evaporation has been modified to a considerable extent, resulting in an improved product that is being marketed as Crown aloes, and brings a correspondingly better price than the inferior qualities of Cape aloes.

Anesthesin, the Ethyl ester of para amido benzoic acid, has been recommended by different observers as an efficient local anesthetic, especially in cases of painful ulcers, or where a surface is to be subsequently cauterized. It is a white powder, odorless and tasteless, having a melting-point of about 89·5; it is slightly soluble in hot water, almost insoluble in cold water, freely soluble in acetone, benzol, chloroform and the fixed or volatile oils. All of the resulting solutions are said to be quite permanent. It has also been given internally in doses of 0·30 to 0·50 two or three times a day.

Aspirin, or Acetyl salicylic acid, appears to be finding considerable favor, if we are to judge by the number of notices or articles that we meet with in the current medical journals. The dose is variously given as being from 0·05 to 2·00 four or five times a day. It is said to be an extremely unstable compound, being readily decomposed by solvents like water or alcohol. Wielch (*Wiener Med. Press*, 1902) warns against the indiscriminate use of this compound,

particularly in cases of enteric fever or phthisis, in both of which conditions, sudden collapse and other untoward complications have been observed.

From the German journals it appears that Acetyl salicylic acid is being made, and sold in Germany, by several of the large manufacturing chemists, as Acetyl salicylic acid.

Guaiacum has been investigated by several investigators, among them Schaer (*Archiv. f. Exp. Path. u. Pharmakol.*, 1902) who thinks that the antisyphilitic, diaphoretic and antiarthritic properties of guaiac are due to the contained saponin. It has been suggested that this be isolated and compared with other known forms of saponin, especially as to its chemical as well as therapeutic properties.

Koryzaphylla is a trade name for a paper handkerchief that is being introduced, especially in Germany, for use by patients suffering from pulmonary tuberculosis, grippe, or any other affection of the mucous surfaces of the nose or throat. They have been recommended by practitioners as a hygienic measure to prevent possible infection, by burning the used handkerchief.

Magnesium Dioxide.—According to an editorial in a recent number of the *Medical Record*, vol. 62, p. 139, a process for the manufacture of this compound has been evolved by Dr. Friederich Elias, of Berlin. The preparation itself is claimed to be capable of emitting a large amount of oxygen throughout the system.

Biogen is a trade name for what is claimed to be magnesium dioxide. This is being put on the market by an American firm. Whether or not it corresponds to the substance referred to above, the writer of this notice is unable to say.

In this connection, however, it may be interesting to note that from three to five parts, by weight, of solution of hydrogen dioxide, may be added to one part by weight of light calcined magnesia without decomposition. The resulting mixture may be dried and subsequently powdered, retaining from 60 to 80 per cent. of the contained oxygen. The resulting powder retains the oxygen without any appreciable loss. Some specimens of this mixture, made upward of four months ago, still give the characteristic blue coloration on the addition of dilute sulphuric acid and solution of a bichromate salt.

Hydrogen Dioxide in a crystalline form has been obtained by W. Staedel (*Zeitschr. f. angw. Chem.*, 1902) by cooling a 95 or 96

per cent. solution of hydrogen dioxide to minus 20 or 23 degrees centigrade. Despite the fact that this crystalline compound combines with explosive violence with readily oxydizable materials, it appears to be quite stable under favorable conditions.

Microcidin (Sodium naphtolate). Belioz (*Jour. des Practiciens*) has used this for several years and considers it a powerful antiseptic. It may be made according to the following formula:

Naphtol B	25
Liquid caustic soda, 30 per cent.	40
Distilled water	40

Mix the soda solution and water and dissolve the naphtol by aid of heat. Evaporate to dryness. The resulting powder is white or nearly white, and freely soluble in water. As an antiseptic it is said to be used in solutions of from three to five parts in a thousand.

Opium.—According to Gehe & Co.'s "Handelsberichte" this drug is being systematically and extensively adulterated. It appears that there are two distinct varieties of opium—the soft or manufacturers opium, used largely for the production of opium alkaloids, is usually sold by units of assay; while the other, that is known as Smyrna or druggists opium, if it meets the particular pharmacopœial requirement for morphine, has other points of favor beside the total alkaloidal content. It is this latter grade of opium that is being systematically cheapened by the admixture of either cheaper grades of opium; or where this will not reduce the morphine strength sufficiently, or is not readily available, the opium is cheapened by the addition of wheat-flour or powdered poppy heads. It is then worked over into cakes and wrapped in poppy leaves, like the original. Von Vogl, in calling attention to this same fact, states that he had seen a sample of opium in which the adulterant had evidently been an inferior grade of gum arabic or gum tragacanth.

Pancreone.—This substance is a reddish-gray powder, nearly or quite tasteless, insoluble in water or dilute acids, but freely soluble in faintly alkaline media. It is obtained by the action of tannin on pancreatin, and is said to be capable of withstanding the action of the gastric juices without injury, becoming active, however, in the alkaline fluids of the intestines. It is given in doses of from 0·10 to 0·50 in the form of powder, cachet or tablet (*Muench. Med. Woch.*)

Pulmoform is the name given to methyl guaiacol, or a combination of formaldehyde and guaiacol. Said to be odorless and tasteless

and may be given in doses of 0·5 to 1·0 four or five times a day.

Pulmin is the corresponding combination of creosote and formaldehyde. This is said to be a yellowish powder without odor or taste and may be given in the same size doses as pulmoform (*Phar. Centralh*).

Quinine, according to Dr. H. Marx (*Muench. Med. Woch*, 1902), is a more efficient antiseptic than carbolic acid. He recommends the use of a 1 per cent. solution made up as follows:

5· Quinine hydrochlorate.
15· Alcohol.
480· Water.

Warm slightly before using so as to have the quinine in complete solution. In addition to the antiseptic properties, this solution is also said to be styptic and deodorizing.

Rheumatin, the salicylate of salicylic-acid-ester of quinine, is a white powder sparingly soluble in water. As its trade name would indicate, it is being recommended as a specific in cases of rheumatism, given in doses of 1·00 three or four times a day.

Salochinin, the salicylic-acid-ester of quinine, is being recommended as a tasteless substitute for quinine. According to the published reports, the active dose is from 1·00 to 3·00 daily.

Rhubarb.—Tschirch and Heuberger, in an advance note (*Schweiz. Wochs. f. Chem. u. Phar.*, 1902, p. 282) announce that they have made an elaborate analysis of rhubarb. They find among the substances that need not be considered in connection with the physiologically active bodies contained in this drug, a pectin-like body (Cholestrin), some gallic acid, and a dextro-rotatory sugar.

Of the pharmacologically active ingredients they recognize two groups of glucosides: (1) A tannoglucoside (rheotannoglucoside); (2) an anthraglucoside (rheoanthraglucoside). These glucosides are always accompanied by their decomposition products, and are separated with difficulty. Among the decomposition products of anthraglucoside the authors consider chrysophanic acid, methyl ether rheum emodin and rhein.

Sodium Carbonate.—Gehe & Co., in their "Handelsberichte" for April, 1902, report an interesting fact in reference to this salt. It appears that the Aztecs of Mexico and Central America used sodium carbonate to facilitate washing long before the discovery of Mexico by the white man. Sodium carbonate occurs native in sev-

eral springs and inland lakes of Mexico, and at the present time is being produced in commercial quantities by several concerns.

Sucramine.—A new sweetening agent. Bellier (*Bull. Gen. de Therap.*) finds that sucramine is very soluble in water, slightly soluble in alcohol, completely insoluble in ether, acetone and benzin, neutral in reaction and leaves no residue after combustion in air. By boiling an aqueous solution of sucramine with magnesia, considerable ammonia is formed; this, in connection with other physical characteristics, lead the writer to believe that the substance is simply an ammoniacal salt of benzoic sulfamid or saccharin.

Sugar.—Some idea of the amount of research that has been done on this useful as well as interesting organic compound may be had from an examination of a paper on the chemical tests for sugar by M. Duyk (*Bull. de la Soc. Royale de Phar. de Bruxelles*, No. 3, 1902). In this paper the author has gathered the names and formulas for the principal reagents for sugar. Upwards of eighty-five names of tests and the accompanying formulas are given in this paper alone.

Tannin.—According to Dr. Calmetto (*Zeitschr. f. angew. Chem.*, 1902) tannin may be entirely converted into gallic acid by introducing into a solution a pure culture of a fungi, Aspergillus gallomyces.

Tincture of Iodine.—E. Beuttner (*Schweiz. Wochschr. f. Chem. u. Phar.*) gives a lengthy account of some experiments that he has been conducting as to the percentage of loss of free iodine and the factors that enter most largely into the decomposition. He finds that heat promotes decomposition more rapidly than access of air or light. From his investigations he concludes that tincture of iodine should be made only in small quantities, and should not be kept on hand.

Upol, a compound of urea and quinic acid, is employed in uric acid diathesis, given in doses of 2·00 to 5·00 (*Therap. Month.*, 1902).

Valyl—diethylamid-valerianate—has been used in cases of hysteria, neurasthenia, hypochondria, hæmacrania and neuralgia. On account of the disagreeable taste and odor, it is mixed with suet and dispensed in gelatine capsules. Given in doses of about 0·10 three times a day (*Therapie der Gegenwart*, 1902).

Wax.—A case of extensive adulteration is reported by R. Berg (*Chem. Zeit.*, 1902, p. 310) who reports finding a large consignment from Haifa, in Syria, to be composed approximately of 46·7 parts of beeswax, 11·7 ceresin, 38·8 rye-flour and 2·8 of moisture.

RECENT LITERATURE RELATING TO PHARMACY.

EXTRACT OF ERGOT.[1]

It is not in accordance with the present state of our knowledge of the active principles of ergot, says Meulenhoff, that Ergotine Bonjean maintains such a prominent position. It contains a very unsatisfactory proportion of those principles. This was, of course, not known when Bonjean published his researches on ergot, in 1841, and recommended his preparation to the medical profession. The German Pharmacopœia seems to have acknowledged this fact and introduced, side by side, with Bonjean's preparation, a formula for an extract of its own. The Swiss Pharmacopœia has rejected Bonjean altogether.

Neither preparation deserves to be recommended. Ergot cannot be thoroughly exhausted of its alkaloid by the use of acidulated water, nor by percolation with alcohol of 20 per cent., nor by alcohol of 20 per cent. to which acetic acid is added, nor by alcohol of 42 per cent. Alcohol of 70 per cent. exhausts it thoroughly. There is no necessity to deprive ergot of its fat, of which it contains on an average 35 per cent. This does not affect its therapeutic value. This is in contradiction to a statement by Grover, in our editor's article on "Cheap Drugs," line 3 from below on page 319, July number of this JOURNAL. Meulenhoff proves his standpoint by a great amount of figures, for which the interested reader is referred to the original paper. H_2SO_4 is preferable over any other acid in connection with ergot, because ergotine sulfate has the greatest solubility of all the other alkaloidal salts. It is not quite clear why the Ph.G. adds HCl to its percolate. It cannot be to separate sclererythrine, because the percolate is not filtered after the addition of the acid, nor to keep alkaloids in solution which are not there.

An assay method is based upon making an acidulated aqueous exhaustion alkaline with ammonia and shaking out with ethylic ether. Keller's MgO has no advantage over NH_3. The residue of the ethereal exhaustion is afterwards redissolved in acidulated water, whereby some decomposition products remain behind; these are separated, the fluid is made alkaline again and shaken out with ethylic

[1] The original pamphlet, by Dr. J. D. Meulenhoff, consists of 38 closely printed pages, and is reprinted from the *Pharm. Weekblad*, for March, 1902.

ether for a second time.[1] This brings the yield of purified alkaloid to about 0·1 per cent. (one-tenth).

The ergot used was chiefly of Russian origin. [Ref. used once ergot collected in Wisconsin, of good quality.] It is of the greatest importance for a thorough exhaustion that the powdered ergot [B 30 of the Dutch Pharmacopœia—60 would do in the U S.—Ref.] is moistened with one-third of its weight of the alcohol before percolation.

A slow evaporation, even when the distillation of the percolate is conducted in vacuo, is objectionable. It involves a loss of alkaloid. [The author speaks of a temperature of 56° C. This is, of course, not the temperature whereby alcohol can be distilled in vacuo. With the pressure of city water I succeeded always to distil the alcohol from a percolate at or near 18° C., but for the evaporation of the remaining aqueous fluid I would recommend the introduction in the pharmaceutical laboratory of vacuum apparatus combined with stirring apparatus, which are common elsewhere (manufacturing of sugar, tannin, glucosides in general). E. A. Lenth, Berlin, Germany, shows them in his catalogue on page 26, for pharmaceutica purposes. Ref.]

Extract of ergot deteriorates. [I have no figures if a fluid extract does. But are not the therapeutic effects of ergot very oscillating? Ref.] J. B. N.

THE CHEMISTRY OF CANNABIS INDICA.

According to Humphrey (*Pharm. Jour.*, May 3, 1902) three products are obtained in India from the female plants of *Cannabis sativa*, Linné. The dried and crushed leaves are known as "bhang," and the compressed and flowering tops as "ganja." A resinous secretion exudes from the leaves and bracts, and during the preparation of "ganja" some of this separates in the form of a grayish powder, which, when mixed with an extract of the plant, is known as "charas," this latter product being used for smoking. The best charas, however, consists of resin collected from the flowering tops. "Ganja" also varies in quality. The best grade is produced in Bengal, and consists of the dried and compressed flowering tops of female plants which have not been fertilized, as it has been found

[1] A process with which readers of "Lyons' Manual" for pharmaceutical assaying are familiar enough to save the translation of details given by Meulenhoff. Ref.

that the secretion of resin is increased if the formation of seed be prevented. The drug which is official in the British Pharmacopœia is the Bombay ganja, and as this may consist of either flowering or fruiting tops, is likely to be of inferior quality.

A number of investigators have reported the presence of alkaloidal substance in this drug, but the author is of the opinion that what they found was either choline, or a decomposition product of it, as was pointed out by Jahns, who first isolated choline from the drug. This principle is a strong base, crystallizes with difficulty, and is not infrequently found in plants. By the action of caustic alkalies it can be converted into trimethylamine, which also occurs naturally in some plants.

The volatile oil of Indian hemp, which consists principally of a sesquiterpene (cannabene) and paraffin, has also been the subject of considerable investigation, but the experiments on animals in 1886, by Roux, proved it to be inactive.

The most important constituent of the drug appears to be the resin, which constitutes the greater part of charas of good quality. From charas, Wood, Spivey and Easterfield obtained (*Jour. Chem. Soc.*, 69 [i], 539), a terpene, a sesquiterpene, a crystalline paraffin and 33 per cent. of a toxic red oil having the formula $C_{18}H_{24}O_2$, and to which they gave the name cannabinol. This they regarded as the only active constituent of the resin. Further study, however, showed (*Jour. Chem. Soc.*, 75, 20) that this red oil or crude cannabinol was a mixture of two compounds having similar physical properties, only one of which has been isolated, and for which the name cannabinol has been retained. It has the formula $C_{21}H_{28}O_2$ and is obtained by distillation of an ether extract under diminished pressure, the distillate forming a transparent brownish resin when cool. When administered in very small doses, this pure cannabinol produces the toxic effects characteristic of Indian hemp, and, as stated by the author, there is little reason to doubt that it is the active principle of the drug.

In discussing the subject of the active principle of this drug and the cause of its loss of activity, Professor Marshall states (*Pharm. Jour.*, May 3, 1902, p. 362) that the active principle is undoubtedly of a resinous character, and that although the presence of alkaloids has been reported by various investigators, none of them possessed the physiological properties peculiar to the drug itself. Professor

Marshall also calls attention to the work of Wood, Spivey and Easterfield on charas, in which they found no alkaloid whatever.

Having observed that when cannabinol is left exposed to the air in a test tube it gradually darkens, commencing on the surface, the author instituted a series of experiments, which not only showed that this darkening is due to oxidation but that the activity of cannabinol is thereby impaired. He therefore infers that the loss of activity of Indian hemp is due to oxidation of the active ingredient, although oxidation of the terpene may also have something to do with the deterioration of the drug. As a result of his observations the author advises keeping cannabis preparations well protected from the air, and if they are to be kept for any length of time, hermetically sealed packages are to be preferred. In this connection he states that many of the accidents which occur in practice are probably due to the difference in activity between surface layers of the preparation and those lower down, or to the difference between recent preparations and those that are old and inert from exposure.

F. Y.

THE NATURE OF PEPSIN.

The veil of mystery which has enshrouded the subject of enzymotic processes in the human body is beginning to fall beneath the hands of careful investigators. That the pepsin usually obtained from the gastric juice and mucous membrane of various animals is not the essential enzyme, but contains this mixed with a number of impurities, is conclusively shown by the latest researches of C. A. Pekelharing (*Hoppe-Seyler's Ztft. f. Physiol. Chemie*, March 20, 1902). In spite of laborious investigation he did not succeed in obtaining from the gastric mucous membrane a proteolytic enzyme of constant composition. In hundreds of preparations obtained from pigs' stomachs, which preparations had been submitted to repeated processes of purification, it was found that the nitrogen and hydrogen content were in each case respectively constant, whereas the carbon and particularly the phosphorus content were subject to variation, which indicated the presence of impurities. The longer the process of purification was carried out, the smaller was the proportion of phosphorus obtained. He was even able to obtain a pepsin that was phosphorus-free. The author does not deny the possibility that pepsin occurs in the gastric-juice in combination with lecithin, nevertheless he asserts that the activity of the enzyme is independent

of the existence of lecithin or of any other phosphorus-containing substance. It was discovered that the mucus with which preparations of gastric juice were contaminated contained a proteid of which phosphorus is one of the constituents. The author agrees with Friedenthal that the proteid body precipitated from solutions of pepsin by heat contains a carbohydrate as well as a pentose molecule. Pekelharing was able to study to better advantage a substance obtained from the mass precipitated by heat, which substance possesses the properties of an acid, soluble in water on the careful addition of an alkali. For this substance the author proposes the name "pepsin-acid," and has learned to recognize it as one of the splitting-products of pepsin. This body belongs to the class of proteids corresponding with other members of this class, both in the nature and the respective proportions of its constituents, and differing from the entire mass precipitated from solutions of pepsin by heat only in respect to the proportion of sulphur. Pepsin prepared from the gastric mucous membrane of the pig and that prepared from the gastric juice of the dog may be placed in the same category. The differences between them may be ascribed to the difficulty with which pepsin is extracted from the mucous membrane in its pure form. Both varieties are, like all the other proteids, levorotatory, but there is no relation between the amount of rotation of the plane of light and the reaction of the solution. According to the author, the fact that the substance obtained from the mucous membrane possesses sufficient purity for a proteid body indicates that this exceptionally active pepsin is the enzyme *per se*, and does not owe its digestive power to the presence of associated bodies. In the first place, the activity of pepsin is destroyed by heat and at the same temperature as that at which albumin is coagulated. In the second place, as soon as gastric juice is deprived of its albuminous constituent through semi-saturation with ammonium sulphate, it loses its zymotic power. Moreover, the presence of ammonium sulphate is to a large degree inhibitory to the activity of pepsin. It has previously been shown by the author, and later by Nencki and Sieber, that it is possible to prepare active solutions of pepsin that do not give the reactions for proteid bodies; this fact, according to the author, does not negate the idea that pepsin is an albuminous body. The observers just mentioned have advanced certain facts in favor of the proposition that it is possible for the same molecule to dis-

play diverse zymotic activities. Without adding anything to this contention, the author inclines to the view of Fisher, as presented in the following metaphor: There are keys constructed in the form of a ring to which are attached side-branches, each one of which fits a different lock. Let one or more of these attachments be bent, or in any other way incapacitated, the remaining branches will nevertheless retain their peculiar property.—*Med. News*, 1902, p. 1081.

CERTIFIED MILK.

It is by no means generally known that the term "certified milk" originated in New Jersey with the Essex County Medical Commission, in 1893. This commission was organized for furnishing the medical profession with a milk properly prepared and properly handled, suitable for clinical purposes. The eighteenth report of this commission, which has just been received, demonstrates how stringently the dairyman, with whom their contract was made nine years ago, has adhered to the standards required, the milk showing the lack of micro-organisms in large numbers and the entire absence of pathogenic varieties; an unvarying resistance to early fermentative changes, so that it may be kept under ordinary conditions without extraordinary care; and a constant nutritive value of known chemical composition, with a uniform relation between the percentage of fats, proteids and carbohydrates. A chemist, bacteriologist, physician and three veterinarians are employed by the commission to regulate matters of hygiene, sanitation, etc. The buildings on the farm are well constructed, drained and ventilated; the fodder, which is of exceptional quality, is kept apart from all sources of contamination; there is a good water supply; and everything is kept scrupulously clean continually. There are no stagnant pools in the neighborhood; no fowl, hogs, horses or other live stock on the farm; no sick or excited cows; and no animal bred through consanguinity within a period of three generations. The stables are so frequently cleaned that no animal odors are noticeable. The cows are thoroughly milked in a clean building, after their udders have been cleaned, and the milker, having put on clean overalls, has washed his hands.

The milk is at once transferred to sterilized, dry cooling cans, after passing through a sieve with no less than 100 meshes to the linear inch. The milk is cooled in a separate building, to between

40° and 50° F., inside of forty-five minutes after milking. It is then packed in glass jars, which have been cleansed and sterilized, and is hermetically sealed. These are ready for shipment and are delivered before the milk is twenty-four hours old. Montreal, New York, Philadelphia and other cities of the United States have taken this commission for a model and now produce "certified milk" prepared upon the same lines. The next generation will be able to look back with amazement upon the methods now prevalent for the destruction of the bacteria in milk, pasteurization and sterilization of the milk, both undoubtedly harmful procedures which will have become useless by the progress of cleanliness alone.—*Phila. Med. Jour.*, 1902, p. 992.

CORRESPONDENCE.

DEAR SIR:

In examining some old certificates of membership in the College of Apothecaries, which have lately come into the possession of the College, two of them issued in 1821, the year when the College was organized, I observed above the sketch of a laboratory on the certificate a legend which differs somewhat from that on the certificate now in use by our College. It reads thus, "*Quem scit uterque exerceat artem*"—the translation of which is, "Let each one practise the art which he knows." In the year following, 1822, the title of *our* College was adopted and the act of incorporation secured. The committee who were charged with the duty of having the certificate altered to correspond with the corporate name, had the legend changed to a quotation from one of Cicero's writings, and it reads, "*Quam quisque novit artem in hac se exerceat*"—the translation of which is, "Let each one exercise himself in the art which he knows."

It is to be regretted that some one did not take up this subject before all of those earnest busy workers for the good of humanity and our profession, who were instrumental in securing our charter, revising the certificate and settling the principles which have resulted in so great a success as our present condition shows, are gone.

One other fact should be noted in connection with these legends on our certificates—that they all point to the importance which the organizers of our College attached to the *educational qualification* of those who should become members of the profession and associates in the College work.

This is so well shown by the legends.

(1) Let each one work in the business he knows.

(2) Let each one exercise himself in the art which he knows.

(3) The legend of the seal, which goes further and tells the members that it is *safety* to know all these things.

Let us all heed the lessons that the worthy pioneers of pharmacy so wisely planned and worked so earnestly to carry out their plans when organizing our College; then our present pharmacists will live in the kind remembrances of their successors when they have left their active labors to younger hands.

THOMAS S. WIEGAND.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

"First Book of Qualitative Chemistry," for studies of water solution and mass action. By Albert B. Prescott and Eugene C. Sullivan. Eleventh edition, entirely rewritten. New York: D. Van Nostrand Company, 1902. Price, $1.50.

The first edition of Prescott's "First Book of Qualitative Chemistry" appeared in 1879. The successive editions were favorably received by students of chemistry in the high schools, colleges and universities, as the work not only contained the information the students desired, but it was clear and concise and free from any ambiguity. The objective point of the author was not that the student might only secure the results and carry on analysis, but that primarily he might have "a personal acquaintance with the character of the chemical elements and with the nature of chemical change."

The eleventh edition contains all of the valuable features of the earlier editions, in that the grouping of the elements is according to the Periodic System, and the composition of materials occurring in daily life are given in a large number of instances. In addition, the work has incorporated in it the results of the fundamental researches of Ostwald in inorganic and analytical chemistry.

The Chemistry of the Terpenes. By F. Heusler. Authorized translation by Francis J. Pond. Carefully revised, enlarged and corrected. Philadelphia: P. Blakiston's Son & Co., 1902. Price, $4.00.

The study of the chemistry of volatile oils has attracted the attention of chemists, botanists and pharmacists for years. During the last twenty years Wallach and others have developed by their

methods of research order out of the chaos, and the result has been an interest in the study of volatile oils that is probably not superseded by that of any other plant constituent. The works of Bornemann on ethereal oils, and of Heusler on the terpenes, paved the way for the student as well as specialist to survey the results of numerous investigators and comprehend their real import. The publication of the American edition of Gildemeister and Hoffmann's work on the ethereal oils by Edward Kremers, and now the translation of Heusler's work on the terpenes, by Francis J. Pond, are particularly welcome additions to English chemical literature.

The following subjects are treated: Hemiterpenes; terpenes proper, $C_{10}H_{16}$; hydrocarbons, $C_{10}H_{18}$; hydrocarbons, $C_{10}H_{20}$; oxidized compounds related to the terpenes $C_{10}H_{20}$, which are further divided according to those which may be regarded as derivatives of the hydrocymenes as carvone, and those which are analogues of pinene, camphene and fenchene, as camphor, etc.; amido-derivatives of the terpenes; amido-derivatives of phellandrene; olefinic members of the terpene series; and sesquiterpenes and polyterpenes.

The original work of Heusler has been considerably enlarged by the review of the numerous contributions on the terpenes which have appeared since the original German edition was published in 1896.

BULLETIN OF THE LLOYD LIBRARY OF BOTANY, PHARMACY AND MATERIA MEDICA. By J. U. and C. G. Lloyd. Pharmacy Series, No. 1. Cincinnati, O.: 1902.

This is the fourth bulletin from the Lloyd Library, and is devoted to "References to Capillarity" to the end of the year 1900, being Chapter VII of "A Study in Pharmacy," by John Uri Lloyd. The references were collected and abstracted under the auspices of Professor Lloyd by Dr. Sigmund Waldbott, Librarian of the Lloyd Library.

For more than ten years Professor Lloyd has been interested in capillary phenomena, particularly in what he has termed the "pendent drop" that is observed on shaking a mixture of chloroform and water. This study led to certain investigations which involve the contact lines between liquids. These results will be recorded now that the references are completed. The whole subject is one fraught with interest, and physicists as well as scientists generally will be pleased to know that Professor Lloyd has continued his

researches so persistently and will eagerly await the succeeding parts.

THE PHARMACOPŒIA OF THE GERMAN HOSPITAL OF THE CITY OF PHILADELPHIA, including formulas for all stock preparations and the average doses of all the drugs, chemicals and preparations usually dispensed at the German Hospital Pharmacy. Compiled for and published by the Board of Trustees. Philadelphia, 1902.

When one considers the high character of the work carried on at the German Hospital and the fact that many of the leading hospitals have published formularies for years, some of which have gone through a number of editions, it is a matter of surprise that the German Hospital has not ere this published the work at hand. The Pharmacopœia of the German Hospital contains a list not only of the drugs of the U. S. Pharmacopœia which are employed in the German Hospital, but many of the newer synthetic remedies and a large number of formulas that have been designed to replace, or to be used instead of, some of the more popular so-called proprietary preparations. In addition to these there are also a number of formulas for various preparations, or stock medicines, that have been in use at the German Hospital for upwards of ten years, the efficacy of which has been sufficiently demonstrated to entitle them to continued use.

One particularly commendable feature of this formulary is that the quantities used in all preparations, as well as doses, are given in the metric system exclusively. Medicine-glasses are used in the hospital in which approximate metric equivalents of spoonfuls are indicated. A goodly portion of the preface is devoted to the consideration of the important subject of posology. Inasmuch as "all medicines are more or less active agents, and it is possible for even the most simple and harmless drug to produce startling and sometimes serious secondary effects," the nurse of the hospital is expected to be on the lookout for the latter and report promptly to the physician. Too much attention cannot be given to this phase of the subject of posology, as doses like definitions of poisons (see this JOURNAL, 1898, p. 527) have not as yet been successfully defined.

This work contains, beside a number of valuable features on general directions in the treatment of poisoning, a table of maximum doses of potent remedies, giving maximum single doses as well as maximum amount that may be given for twenty-four hours.

Both pharmacists and physicians will find the work useful and suggestive.

PRACTICAL METHODS OF URINE-ANALYSIS, for Chemists and Druggists, with Notes on the Composition of the Normal and Abnormal Secretions. Second and enlarged edition. Published at the offices of *The Chemist and Druggist*, 42 Cannon Street, London, E. C. Branch offices: Adelaide, Melbourne and Sydney, Australia; and New York, U.S.A., 1902. Price, 2s. 6d. net.

It matters not whether boards of health in some localities carry on analyses for physicians free of charge or whether some physicians consider it to be beyond the province of the pharmacist to conduct such analyses when he asks a reasonable recompense for his services, the fact remains that reputable pharmacists are in some instances doing this work for physicians and are being paid for it. There are several reasons why the pharmacist is usually a proper person to do this work. Urinalysis is an analytical piece of work, and the graduates of colleges of pharmacy are trained analysts. Chemical analyses, pharmaceutical assays and microscopical manipulations he performs daily during his college work. These are to the pharmacist of primary consideration, and while the physician may receive a certain amount of instruction in these branches, the work is all secondary to the practice of medicine with its multiplicity of other details with which he is engrossed. Urinalysis and blood-examinations are an aid in his diagnoses. These require the time that the physician needs for attending to his office practice or at the bedside of the patient. The busy practitioner does not usually attend to his practice and carry on his analyses any more than he compounds his own medicine. These things he delegates to the pharmacist whom he has learned is competent and trustworthy.

There are many works on the examination of the urine, nearly all of which are written from the viewpoint of the physician. The present book is written for the pharmacist and is a clear and concise treatment of the essentials that are necessary for everyday work in analysis. The following are the subjects treated: Urine in health and disease, referring to composition, collection of sample, daily quantity, physical appearances, reaction, specific gravity and solids; chemical analysis of urine; analysis of abnormal constituents; microscopical examination; optical examination; miscellaneous

matters, including special reagents, report on sample, etc. The work is to be commended to pharmacists and chemists, as the subject is considered, we believe, with the right end in view, viz., the analysis of urine and not so much what these analyses indicate, this belonging essentially to the province of the physician, with whom the results of urinalysis is but one of several factors leading to the diagnosis of disease.

OBITUARY.

Mr. Chas. W. Warrington, an active member of this College, died suddenly on the morning of November 13, 1901, in the residence attached to his store, S. W. corner Seventeenth and Mt. Vernon Streets. Mr. Warrington was born near Moorestown, N. J., and came to Philadelphia in his youth to engage in the drug business. He graduated from the Philadelphia College of Pharmacy in 1876. A short time afterward he formed a partnership with Henry Trimble, under the firm name of Trimble & Warrington, in the wholesale and retail drug business. When Professor Trimble relinquished his commercial interests in the drug business the firm became Warrington & Pennypacker, and continued as such until 1897, when the firm purchased the store at Seventeenth and Mt. Vernon Streets, and in the year following the partnership was dissolved, Mr. Warrington continuing the retail business at this location. He was elected a member of the College of Pharmacy in 1900. He was a member of the Society of Friends and a man of correct habits and quiet, unassuming demeanor. He is survived by a widow, a daughter, and two sons.

Henry C. C. Maisch, Ph.D., died at his residence in Philadelphia, July 1, 1901. He was the oldest son of the late Prof. John M. Maisch, and was born in Brooklyn, in 1865. He graduated from the Philadelphia College of Pharmacy in 1885 and then went abroad for several years, continuing his studies at Göttingen University, Germany, receiving his degree of Doctor of Philosophy from that institution in 1889. Returning to America, he was engaged as a demonstrator and assistant professor at Clark University, Worcester, Mass. He left there to assume a professorship in the Illinois College, at Chicago. For a short time he engaged in a Louisville, Ky., pharmacy, but in 1893 he returned to Philadelphia and decided to

make it his permanent home. Purchasing a store at Tenth and Ogden Streets he engaged in the retail drug business. During his father's protracted illness, just prior to his decease, he assisted Professor Maisch in editing the AMERICAN JOURNAL OF PHARMACY. He revised the recent editions of Maisch's "Organic Materia Medica" and the "National Dispensatory," both recognized as authoritative works, written by his illustrious father. The scientific attainments of Henry C. C. Maisch were not appreciated in the limited scope of his retail drug store, and this venture not proving successful, he disposed of the store and engaged as chemist in the pharmaceutical laboratories of Hance Brothers & White. For several years he was Professor of Materia Medica and Botany in the Medico-Chirurgical College, but had resigned this position the year before his decease. Dr. Maisch had contributed to pharmaceutical literature a number of papers of practical value. His decease was due to appendicitis, operation probably having been delayed too long. He was a member of the American Pharmaceutical Association and of several prominent German organizations. G. M. B.

CHARLES MOHR.

Dr. Charles Mohr, whose death occurred at Asheville, N. C., on July 17, 1901, was well known in pharmaceutical as well as botanical circles.

Dr. Mohr was born in Esslingen, Würtemberg, December 28, 1824. In 1842 he entered the Polytechnical School at Stuttgart, and after three years of study he accompanied the naturalist, Kappler, to Dutch Guiana, but, owing to attacks of malarial fever and other disappointments, he soon returned and found employment at the chemical works of Brunin, in Moravia. In 1848 these works were closed as a result of the political agitations in Germany, and being attracted by the republican form of government, he came to the United States at about the same time as the political refugees from Germany, although he was not regarded as one of them.

The following year, as a forty-niner, we find him in California, where instead of enriching himself by the collection of nuggets of gold, he made a large collection of plants in Central California, but which, together with his collections made later in the Isthmus of Panama, were stolen from him. In addition to this misfortune he

nearly lost his life from Chagres fever. Later we find him making valuable collections of mosses in Mexico, after having temporarily settled in Louisville, Ky. On account of the political revolution in Mexico he returned to the United States and settled in Mobile, Ala., at the time of the Civil War. Here he developed the native materia medica, manufactured medicinal preparations for supplying the Confederates, and made for himself a reputation as an analyst. For many years thereafter he was a successful manufacturing pharmacist, devoting his spare time to studying the flora and natural resources of Alabama.

While Dr. Mohr contributed a limited number of papers to the pharmaceutical journals, and was a member of the Pharmacopœial Revision Committee in 1890, still his reputation rests mainly on his botanical studies, especially those relating to the plant life of Alabama and the forestry of the South. He was employed by the Government in 1880 to investigate the forests of the Gulf States, in connection with the work of the Tenth Census, and examined the forests from Georgia to southwestern Texas, obtaining valuable information, and thus placing himself among the pioneers in forestry work in this country. The Appalachian National Park Association, which has under consideration the "Southern Appalachian Forest Reserve," would honor itself by associating the name of Dr. Mohr with some phase of the work which they are promulgating.

Dr. Mohr was not only engaged in the Forestry Division of the U. S. Department of Agriculture, but was the botanist of the Geological Survey of Alabama, and made collections of southern woods for the Jessup Collection of North American woods in the American Museum of Natural History in New York City, and for the New Orleans Exposition. He also wrote numerous papers upon the botany and geology of the Southern States.

Dr. Mohr was awarded the degree of Ph.D. by the University of Alabama, and was an honorary member of many pharmaceutical and scientific societies, among the former of which we mention the Philadelphia College of Pharmacy.

While the earlier career of Dr. Mohr was fraught with disappointments and discouragements, still these no doubt helped to strengthen his character and to fit him for his life-work—his work being as permanent as the latter years of his life were fruitful and happy. A wife and five children survive him. H. K.